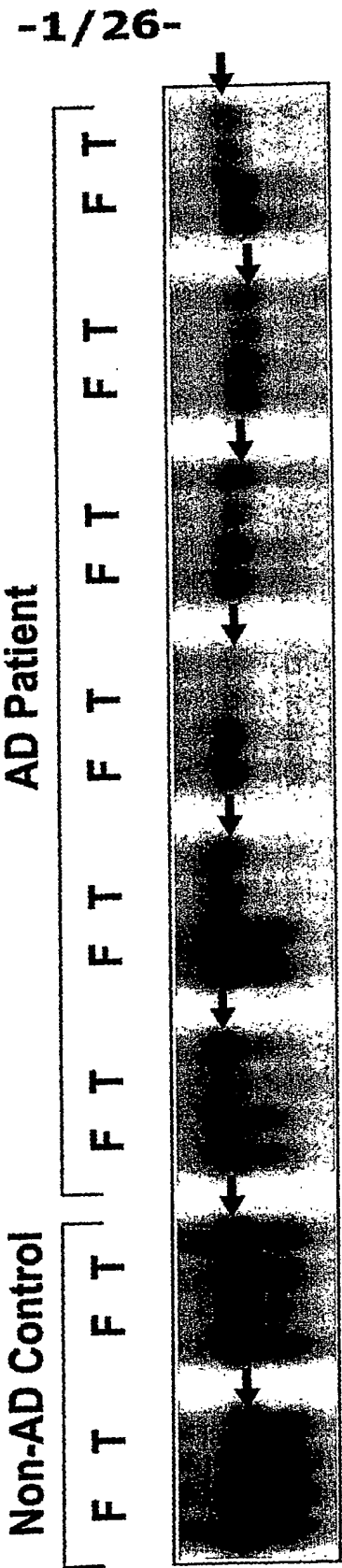
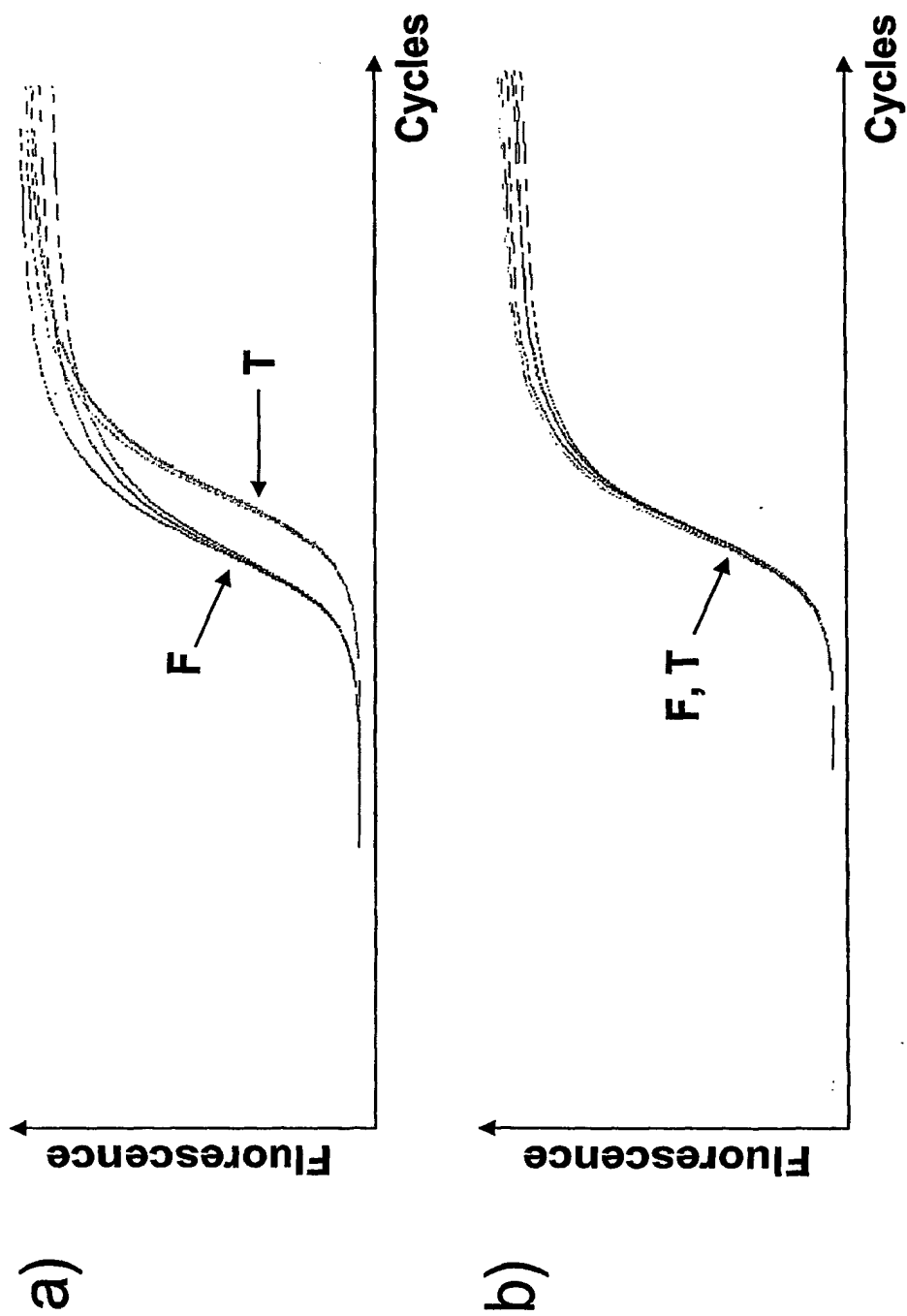


**Fig. 1: Identification of differentially expressed genes in a  
fluorescence differential display screen**



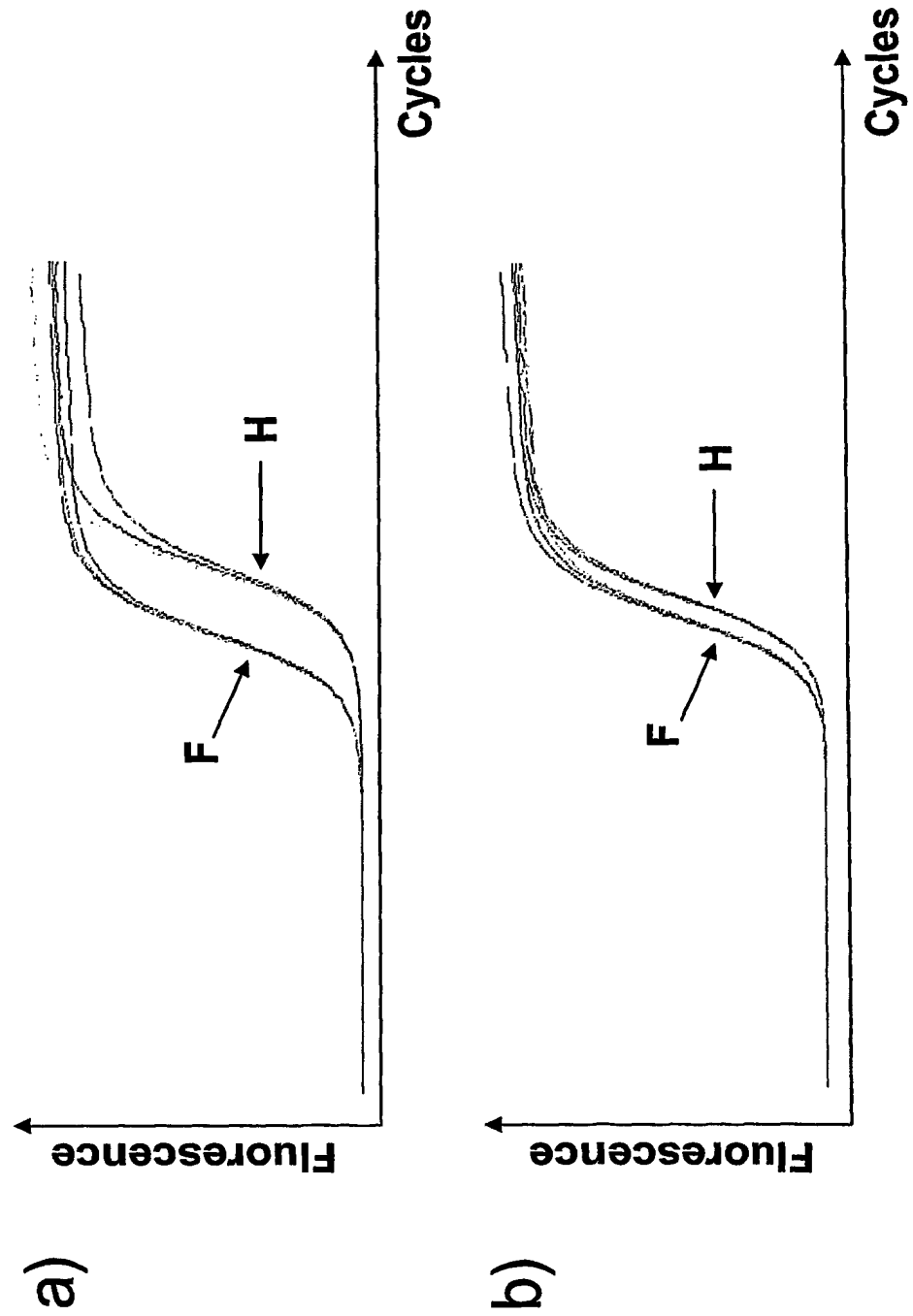
-2/26-

**Fig. 2:** Verification of differential expression of SULT4A1 splice variant 1 and/or splice variant 2 by quantitative RT-PCR



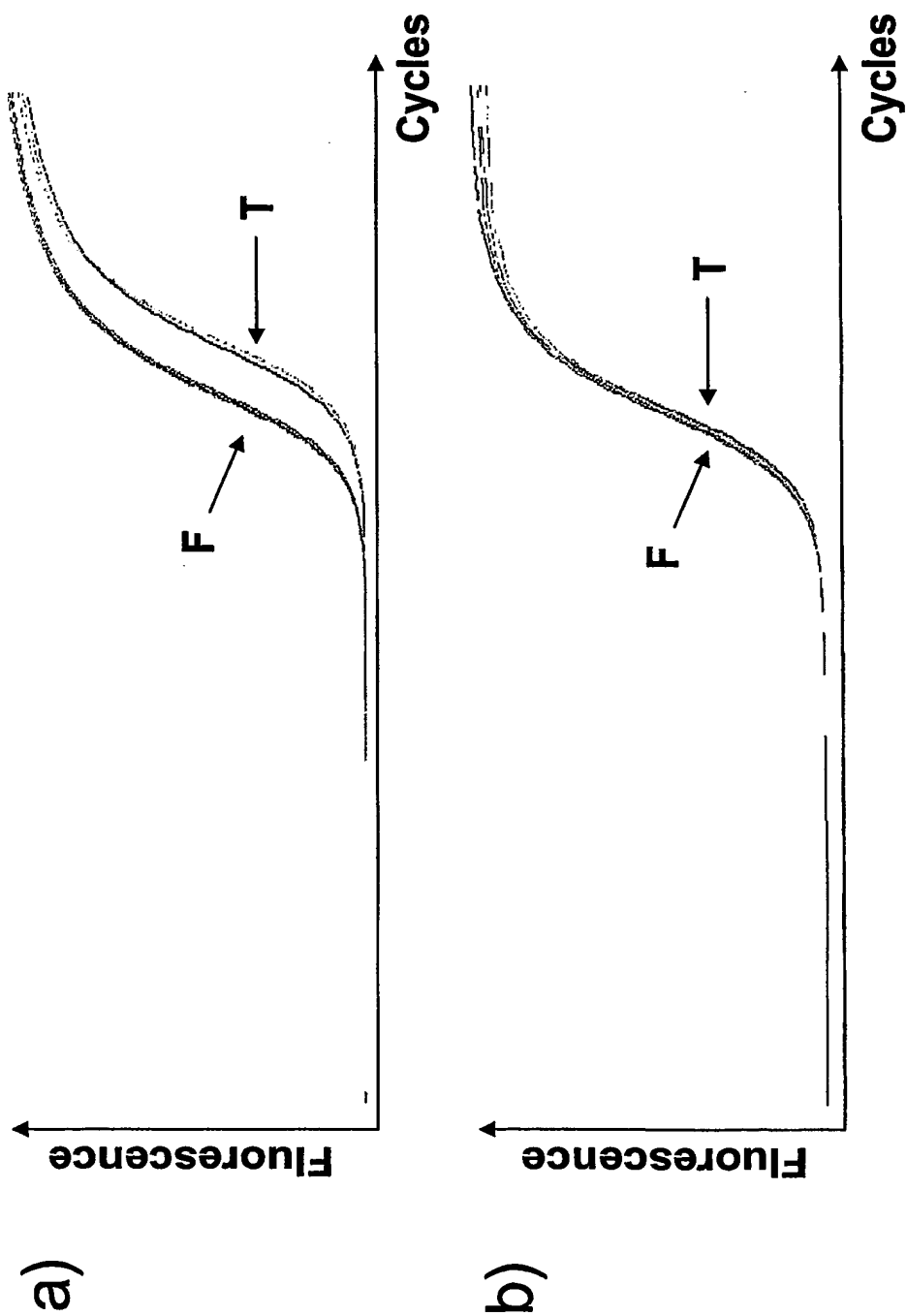
-3/26-

**Fig. 3: Verification of differential expression of SULT4A1 splice variant 1 and/or splice variant 2 by quantitative RT-PCR**



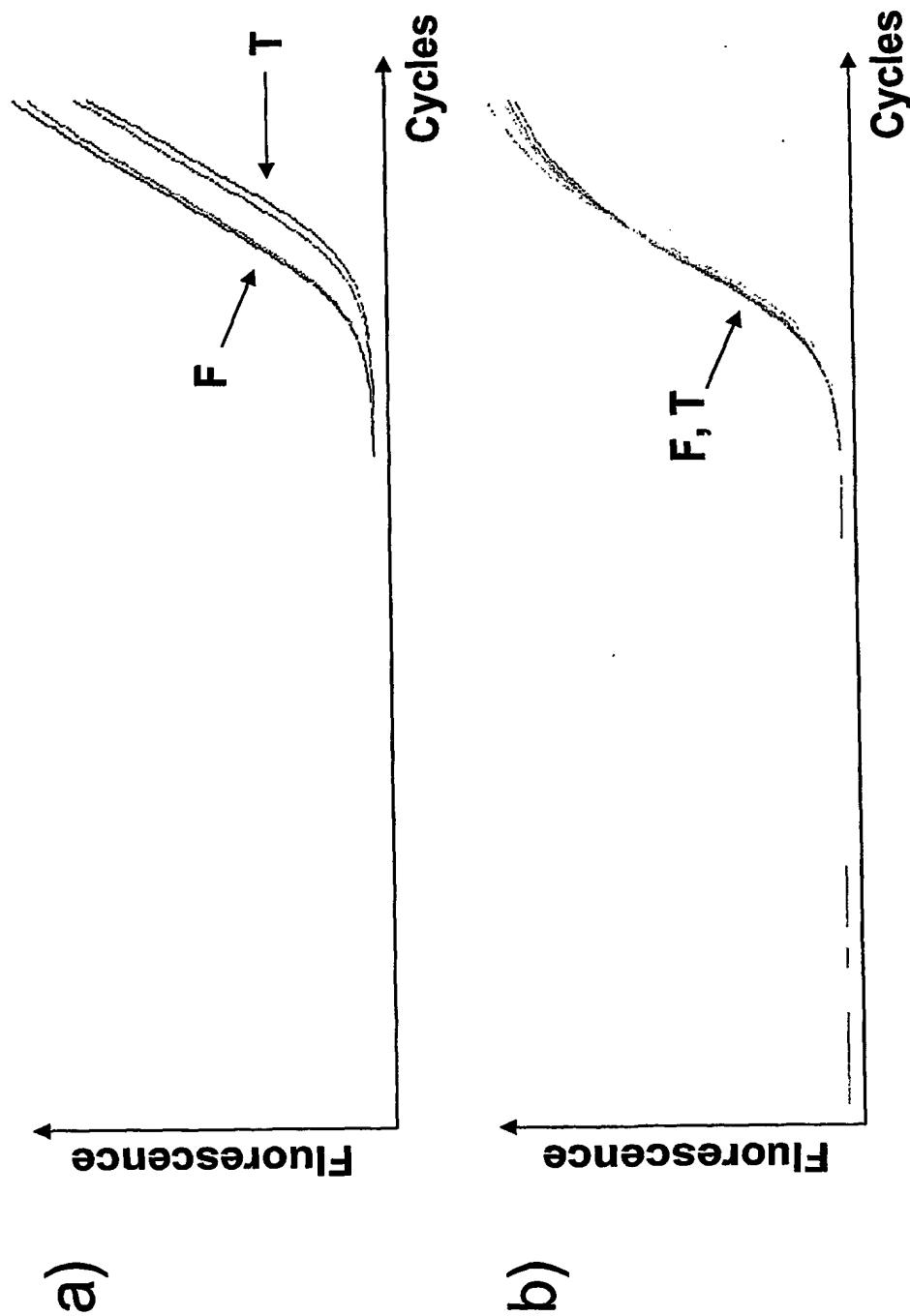
**-4/26-**

**Fig. 4:** Verification of differential expression of SULT4A1 splice variant 1 by quantitative RT-PCR



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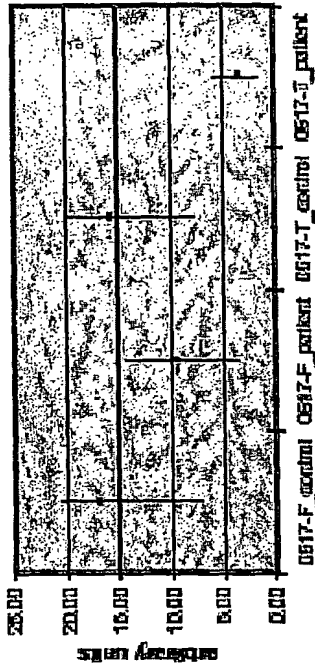
**Fig. 5: Verification of differential expression of SULT4A1 splice variant 2 by quantitative RT-PCR**



**Fig. 6: Analysis of absolute mRNA expression of SULT4A1sv1 and/or SULT4A1sv2**

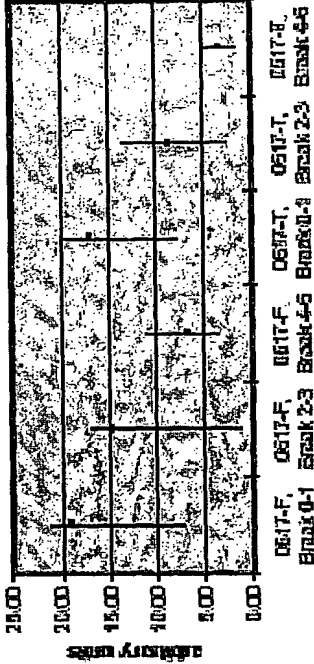
**Comparison of Braak 0-2 with Braak 3-6**

ens0617



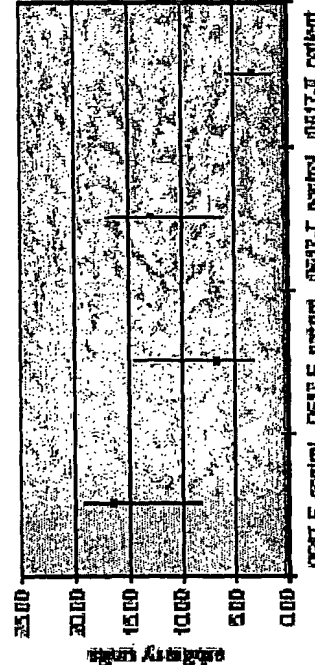
**Comparison of Braak 0-1 with 2-3 and 4-6**

ens0617



**Comparison of Braak 0-3 with 4-6**

ens0617



**Comparison of Braak 0-1 with 2-6**

ens0617

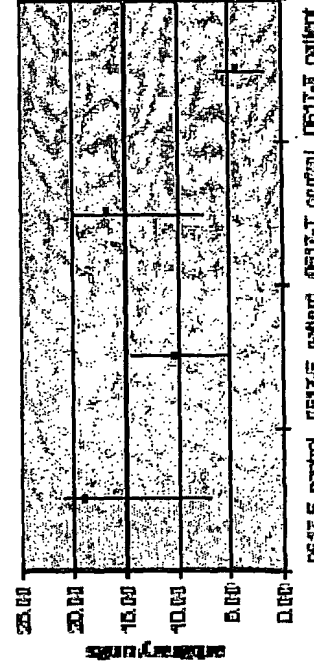


Fig. 7: Analysis of absolute mRNA expression of SULT4A1sv1

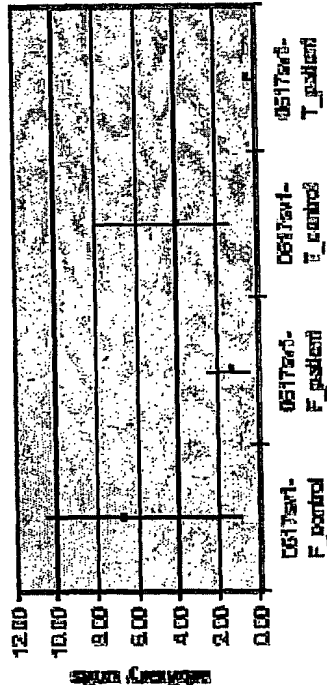
Comparison of Braak 0-3 with 4-6

ens0817sv1



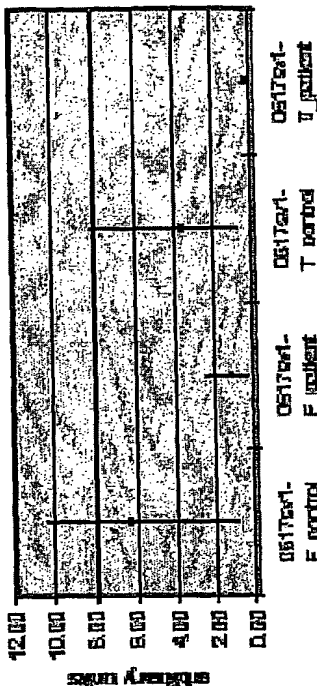
Comparison of Braak 0-1 with 2-6

ens0817sv1



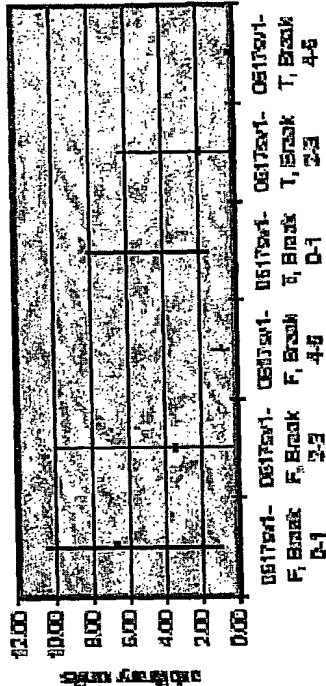
Comparison of Braak 0-2 with Braak 3-6

ens0817sv1



Comparison of Braak 0-1 with 2-3 and 4-6

ens0817sv1



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**Fig. 8: SEQ ID NO. 1:  
amino acid sequence of  
human SULT4A1 protein,  
splice variant 1**

**Length: 284 aa**

```
1  MAESEAETPS TPGEFESKYF EFHGVRLPPF CRGKMEEIAN FPVRPSDVWI
51  VTYPKSGTSL LQEVVYLVSQ GADPDEIGLM NIDEQLPVLE YPQPGLDIIK
101 ELTSPRLIKS HLPYRFLPSD LHNGDSKVIY MARNPKDLVV SYYQFHRS LR
151 TMSYRGTFQE FCRRFMNDKL GYGSWFEHVQ EFWEHRMDSN VLFLKYEDMH
201 RDLVTMVEQL ARFLGVSCDK AQLEALTEHC HQLVDQCCNA EALPVGRGRV
251 GLWKDIFTVS MNEKFDLVYK QKMGKCDLTF DFYL
```



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**Fig. 9: SEQ ID NO. 2:  
amino acid sequence of human SULT4A1 protein,  
splice variant 2**

**Length: 171 aa**

```
1  MAESEAETPS TPGEFESKYF EFHGVRLPPF CRGKMEEIAN FPVRPSDVWI
51  VTYPKSVGYG SWFEHVQEFW EHRMDSNVLF LKYEDMHRDL VTMVEQLARF
101 LGVSCDKAQL EALTEHCHQL VDQCCNAEAL PVGRGRVGLW KDIFTVSMNE
151 KFDLVYKQKM GKCDLTDFDY L
```

**-10/26-**

**Fig. 10: SEQ ID NO. 3:  
nucleotide sequence of human SULT4A1 cDNA,  
splice variant 1**

**Length: 2419 bp**

```
1   GCGACGGCGA CGGCGGCGGC ATGGCGGAGA GCGAGGCCGA GACCCCCAGC
51  ACCCCGGGGG AGTTCGAGAG CAAGTACTTC GAGTTCCATG GCGTGC GGCT
101 GCCGCCCTTC TGCCGCGGGA AGATGGAGGA GATCGCCAAC TTCCCGGTGC
151 GGCCCAGCGA CGTGTGGATC GTCACCTACC CCAAGTCCGG CACCAGCTTG
201 CTGCAGGAGG TGGTCTACTT GGTGAGCCAG GCGCGTGACC CCGATGAGAT
251 CGGCTTGATG AACATCGACG AGCAGCTCCC GGTCTCTGGAG TACCCACAGC
301 CGGGCCTGGA CATCATCAAG GAACTGACCT CTCCCCGCCT CATCAAGAGC
351 CACCTGCCCT ACCGCTTTCT GCCCTCTGAC CTCCACAATG GAGACTCCAA
401 GGTCATCTAT ATGGCTCGCA ACCCCAAGGA TCTGGTGGTG TCTTATTATC
451 AGTTCCACCG CTCTCTGCGG ACCATGAGCT ACCGAGGCAC CTTTCAAGAA
501 TTCTGCCGGA GGTTTATGAA TGATAAGCTG GGCTACGGCT CCTGGTTTGA
551 GCACGTGCAG GAGTCTGCGG AGCACCGCAT GGA CTGCAAC GTGCTTTTTTC
601 TCAAGTATGA AGACATGCAT CGGGACCTGG TGACGATGGT GGAGCAGCTG
651 GCCAGATTCC TGGGGGTGTC CTGTGACAAG GCCCAGCTGG AAGCCCTGAC
701 GGAGCACTGC CACCAGCTGG TGGACCACTG CTGCAACGCT GAGGCCCTGC
751 CCGTGGGCGG GGAAGAGTT GGGCTGTGGA AGGACATCTT CACCGTCTCC
801 ATGAATGAGA AGTTTGA CTT GGTGTATAAA CAGAAGATGG GAAAGTGTGA
851 CCTCACGTTT GACTTTTATT TATAATAACA GAAACAACAA CCTGCATGCT
901 CACAATACCC AGACAGTCTA CTAGCCAAAA GTCCTGTATG CATTCATTTA
951 TTCCTTGCTG GACAAACTCT GGAAGCAGCG TGTGAAACAG CGGGGGAAGG
1001 GAAGAGCGGC GTGAGCGGAG GGAGTGTGAT GATTCCCAAC CGAAGCAGCT
1051 GTCTCGCCTT TAGAACGTGC AGCCTCTCCA TGTCTGATTA CAAACAGTCT
1101 CCACATTGCA GTTCCAATGG CCTGGACCGT AAGGATAAAG CCTGTAATAT
1151 ATGCAACTAG AATGTCTGCC TTTTCAACCC CGTATTATTG TATTTTATAG
1201 AGCTTTTCAC TGGAAATCTA CATAAATGTC AGTAAACCAA ATAAAAGTTC
1251 ATTTCCAAGG GGAATCAGGA GCGAGCCACA CCCGAATGGT AGAAAGATCT
1301 CAGGGTTAAC TCTTTATTTT TGTAGTTTTA TTATCTAAGG CACAGCCATT
1351 CTGTTCTCAC TTGGTTCTGA GATAGTGGTG AGAACAGAGG ATGAGTTGGG
1401 TCTGTTGGGG GGAATCTGGA CACTTGTTTA TTCTGACGGA GTTCACTTCT
1451 TCAGAACCTT CCTGAAATGA GCAGAAATTG TTC ACTAGGT CTTCAGAAATG
1501 GACGTCCTTC TGCCAGAGAC TTCCAGCGGG CGGCTCCAAA GGCCCAATGC
1551 AGAGGAGCCC GCGGAGCATG TGCTGAGGGA AGTCTGCCTG GTGAGGCTGG
1601 CAGGTGGGAG TCTAATGCAG TCAGGAGCAT TTGCATGCAG TGGGTGGAGA
1651 GTCGGCCACC AAAGGACCGA GTTGCCTCG GAATTTGAGC TGAATTCCAC
1701 AGCCTTACTT TGTTTCCTGA AGTGATAGCC TACTAATGCT GGCAAGCAGA
1751 TGCTTAATAG TAAATTTCTA AAATCCCCGG GTCTTTATCA TTCAGTTTGT
1801 TCTGTGCACC TGAGGCGCTC AGCCGTGGGA GGACCATTTT GCGAGTGTAG
1851 CCCTGTTTCA CTCGGATCAG GTTGGCACGG CCGCCTGCGT GTCTGTCCAC
1901 CTCATCCCTC CGTGTATCTG AGGGAGTAAA GGTGAGGTCT TTATTGCTTC
1951 ACTGCCTAAT TTTCTACCCC ACATTCGCTG AAGCGATGGA GATCGGGGG
2001 CCAGTAGCCA GCCAACCCCG TGGGGACCGG GGTGTCTGT CATTTATGTG
2051 GCTGGAAAGC ACCCAAAGTG GTGGTCAGGA GGGTCGCTGC TGTGGAAGGG
```

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```
2101 GTCTCCGTTT TTGGTGCTGT ATTTGAAACG GGTGTAGAGA GAAGCTTGTG
2151 TTTTGTGTTG TAATGGGGAG AAGCGTGGCC AGGCAGGTGG CACGTGGCAT
2201 CGCATGGTGG GCTCGGCAGC ACCTTGCCTG TGTCTGTG AGGGAGGCTG
2251 CTTTCTGTGA AATTTCATTT ATATTTTCT ATTTTAGTA CTGTATGGAT
2301 GTTACTGAGC ACTACACATG ATCCTTCTGT GCTTGCTTGC ATCTTTAATA
2351 AAGACATGTT CCCGGCGTTG CAAAAAAAAA AAAAAAAAAA AAAAAAAAAA
2401 AAAAAAAAAA AAAAAAAAAA
```

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**Fig. 11: SEQ ID NO. 4:**  
**nucleotide sequence of human SULT4A1 cDNA,**  
**splice variant 2**

Length: 2080 bp

```

1   GCGACGGCGA CGGCGGCGGC ATGGCGGAGA GCGAGGCCGA GACCCCCAGC
51  ACCCCGGGGG AGTTCGAGAG CAAGTACTTC GAGTTCCATG GCGTGCGGCT
101 GCCGCCCTTC TGCCGCGGGA AGATGGAGGA GATCGCCAAC TTCCCGGTGC
151 GGCCAGCGA CGTGTGGATC GTCACCTACC CCAAGTCCGT GGGCTACGGC
201 TCCTGGTTTG AGCACGTGCA GGAGTTCTGG GAGCACCGCA TGGACTCGAA
251 CGTGCTTTTT CTCAAGTATG AAGACATGCA TCGGGACCTG GTGACGATGG
301 TGGAGCAGCT GGCCAGATTG CTGGGGGTGT CCTGTGACAA GGCCAGCTG
351 GAAGCCCTGA CGGAGCACTG CCACCAGCTG GTGGACCAGT GCTGCAACGC
401 TGAGGCCCTG CCCGTGGGCC GGGGAAGAGT TGGGCTGTGG AAGGACATCT
451 TCACCGTCTC CATGAATGAG AAGTTTGACT TGGTGTATAA ACAGAAGATG
501 GGAAAGTGTG ACCTCACGTT TGACTTTTAT TTATAATAAC AGAAACAACA
551 ACCTGCATGC TCACAATACC CAGACAGTCT ACTAGCCAAA AGTCCTGTAT
601 GCATTCAATT ATTCCTTGCT GGACAAACTC TGGAAGCAGC GTGTGAAACA
651 GCGGGGGAAG GGAAGAGCGG CGTGAGCGGA GGGAGTGTGA TGATTCCCAA
701 CCGAAGCAGC TGTCTCGCCT TTAGAACGTG CAGCCTCTCC ATGTCTGATT
751 ACAAACAGTC TCCACATTGC AGTTCCAATG GCCTGGACCG TAAGGATAAA
801 GCCTGTAATA TATGCAACTA GAATGTCTGC CTTTTCAACC CCGTATTATT
851 GTATTTTATA GAGCTTTTCA CTGGAAATCT ACATAAATGT CAGTAAACCA
901 AATAAAAGTT CATTTCCAAG GGAATCAGG AGCGAGCCAC ACCCGAATGG
951 TAGAAAGATC TCAGGGTTAA CTCTTTATTT TTGTAGTTT ATTATCTAAG
1001 GCACAGCCAT TCTGTTCTCA CTTGGTTCTG AGATAGTGGT GAGAACAGAG
1051 GATGAGTTGG GTCTGTTGGG GGAATCTGG ACACTTGTTT ATTCTGACGG
1101 AGTTCACTTC TTCAGAACCT TCCTGAAATG AGCAGAAAT GTTCACTAGG
1151 TCTTCAGAAAT GGACGTCCTT CTGCCAGAGA CTTCCAGCGG GCGGCTCCAA
1201 AGGCCCAATG CAGAGGAGCC CGCGGAGCAT GTGCTGAGGG AAGTCTGCCT
1251 GGTGAGGCTG GCAGGTGGGA GTCTAATGCA GTCAGGAGCA TTTGCATGCA
1301 GTGGGTGGAG AGTCGGCCAC CAAAGGACCG AGTTGCGCTC GGAATTTGAG
1351 CTGAATTCCA CAGCCTTACT TTGTTTCCTG AAGTGATAGC CTAATAATGC
1401 TGGCAAGCAG ATGCTTAATA GTAAATTTCT AAAATCCCCG GGTCTTTATC
1451 ATTCAAGTTG TTCTGTGCAC CTGAGGCGCT CAGCCGTGGG AGGACCATTT
1501 TGCGAGTGTA GCCCTGTTTC ACTCGGATCA GGTTGGCAGG GCCGCCTGCG
1551 TGTCTGTCCA CCTCATCCCT CCGTGATATC GAGGGAGTAA AGGTGAGGTC
1601 TTTATTGCTT CACTGCCTAA TTTTCTCACC CACATTCGCT GAAGCGATGG
1651 AGAGTCGGGG GCCAGTAGCC AGCCAACCCC GTGGGGACCG GGGTTGTCTG
1701 TCATTTATGT GGCTGGAAG CACCCAAAGT GGTGGTCAGG AGGGTCGCTG
1751 CTGTGGAAGG GGTCTCCGTT CTTGGTGCTG TATTTGAAAC GGGTGTAGAG
1801 AGAAGCTTGT GTTTTTGTTT GTAATGGGGA GAAGCGTGGC CAGGCAGGTG
1851 GCACGTGGCA TCGCATGGTG GGCTCGGCAG CACCTTGCCT GTGTTTCTGT
1901 GAGGGAGGCT GCTTTCTGTG AAATTTTCATT TATATTTTTC TATTTTCTAGT
1951 ACTGTATGGA TGTTACTGAG CACTACACAT GATCCTTCTG TGCTTGCTTG
2001 CATCTTTAAT AAAGACATGT TCCGCGCGTT GCAAAAAAAA AAAAAAAA
2051 AAAAAAAA AAAAAAAA AAAAAAAA

```

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**Fig. 12: SEQ ID NO. 5**

**Length: 32 bp**

1 GATTGCATCT TTAATAAAGA CATGTTCCCG GC

**-14/26-**

**Fig. 13: SEQ ID NO. 6: nucleotide  
sequence of human SULT4A1 coding sequence**

**Length: 855 bp**

```
1  ATGGCGGAGA GCGAGGCCGA GACCCCCAGC ACCCCGGGGG AGTTCGAGAG
51 CAAGTACTTC GAGTTCCATG GCGTGCGGCT GCCGCCCTTC TGCCGCGGGA
101 AGATGGAGGA GATCGCCAAC TTCCCGGTGC GGCCCAGCGA CGTGTGGATC
151 GTCACCTACC CCAAGTCCGG CACCAGCTTG CTGCAGGAGG TGGTCTACTT
201 GGTGAGCCAG GCGCTGACC CCGATGAGAT CGGCTTGATG AACATCGACG
251 AGCAGCTCCC GGTCTTGGAG TACCCACAGC CGGGCCTGGA CATCATCAAG
301 GAACTGACCT CTCCCCGCCT CATCAAGAGC CACCTGCCCT ACCGCTTTCT
351 GCCCTCTGAC CTCCACAATG GAGACTCCAA GGTCATCTAT ATGGCTCGCA
401 ACCCCAAGGA TCTGGTGGTG TCTTATTATC AGTTCCACCG CTCTCTGCGG
451 ACCATGAGCT ACCGAGGCAC CTTTCAAGAA TTCTGCCGGA GGTTTATGAA
501 TGATAAGCTG GGCTACGGCT CCTGGTTTGA GCACGTGCAG GAGTTCTGGG
551 AGCACCGCAT GGACTCGAAC GTGCTTTTTT TCAAGTATGA AGACATGCAT
601 CGGGACCTGG TGACGATGGT GGAGCAGCTG GCCAGATTCC TGGGGGTGTC
651 CTGTGACAAG GCCCAGCTGG AAGCCCTGAC GGAGCACTGC CACCAGCTGG
701 TGGACCAGTG CTGCAACGCT GAGGCCCTGC CCGTGGGCCG GGGAAAGAGTT
751 GGGCTGTGGA AGGACATCTT CACCGTCTCC ATGAATGAGA AGTTTGACTT
801 GGTGTATAAA CAGAAGATGG GAAAGTGTGA CCTCACGTTT GACTTTTATT
851 TATAA
```

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**Fig. 14: Alignment of SEQ ID NO. 5  
with human SULT4A1sv1 and SULT4A1sv2  
cDNAs**

Length: 32 bp

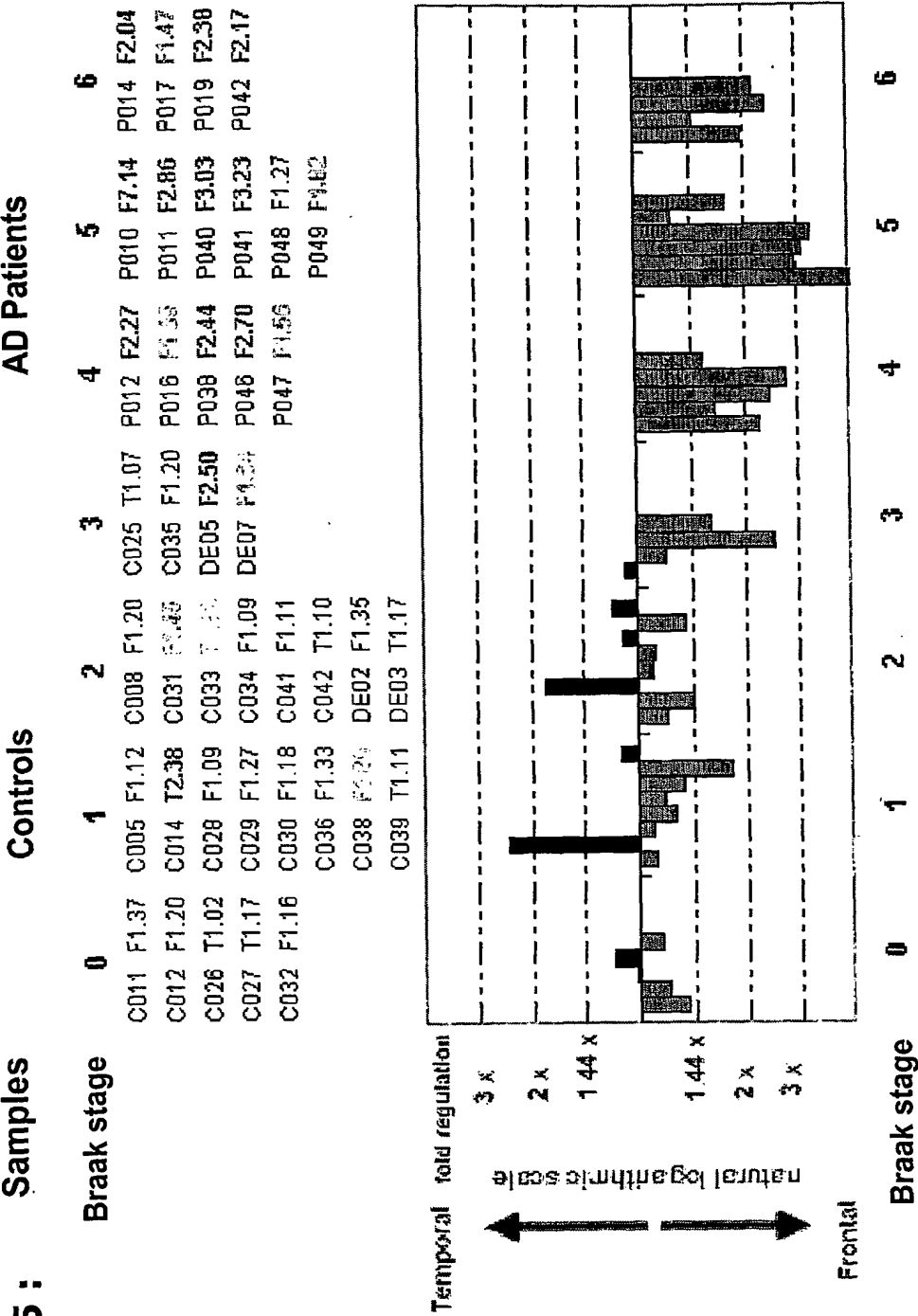
SEQ ID NO.5 : SULT4A1sv1

```
      1 GATTGCATCTTTAATAAAGACATGTTCCCGGC 32
        | |||||
2335 GCTTGCATCTTTAATAAAGACATGTTCCCGGC 2366
```

SEQ ID NO.5 : SULT4A1sv2

```
      1 GATTGCATCTTTAATAAAGACATGTTCCCGGC 32
        | |||||
1996 GCTTGCATCTTTAATAAAGACATGTTCCCGGC 2027
```

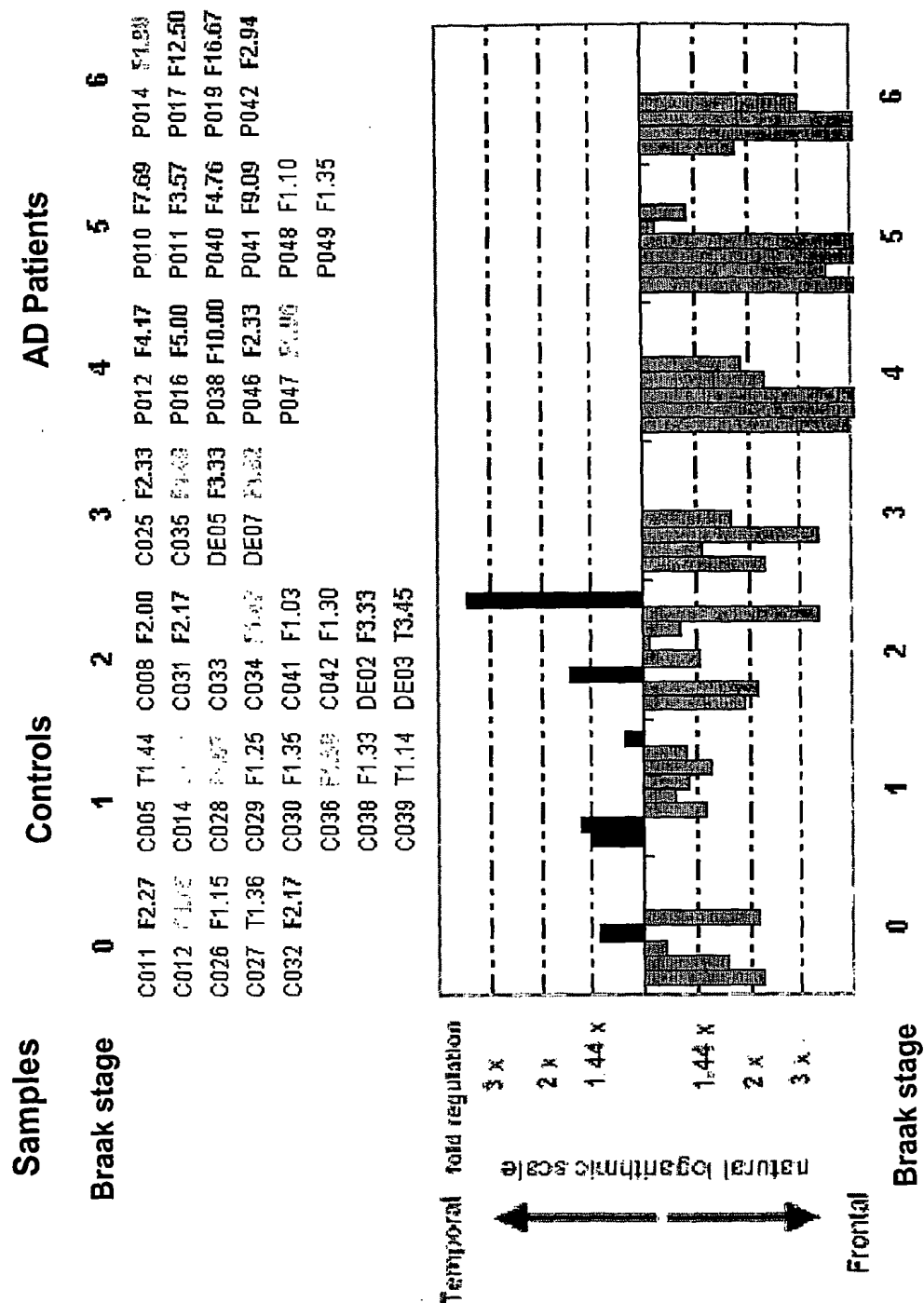
Fig. 15 :





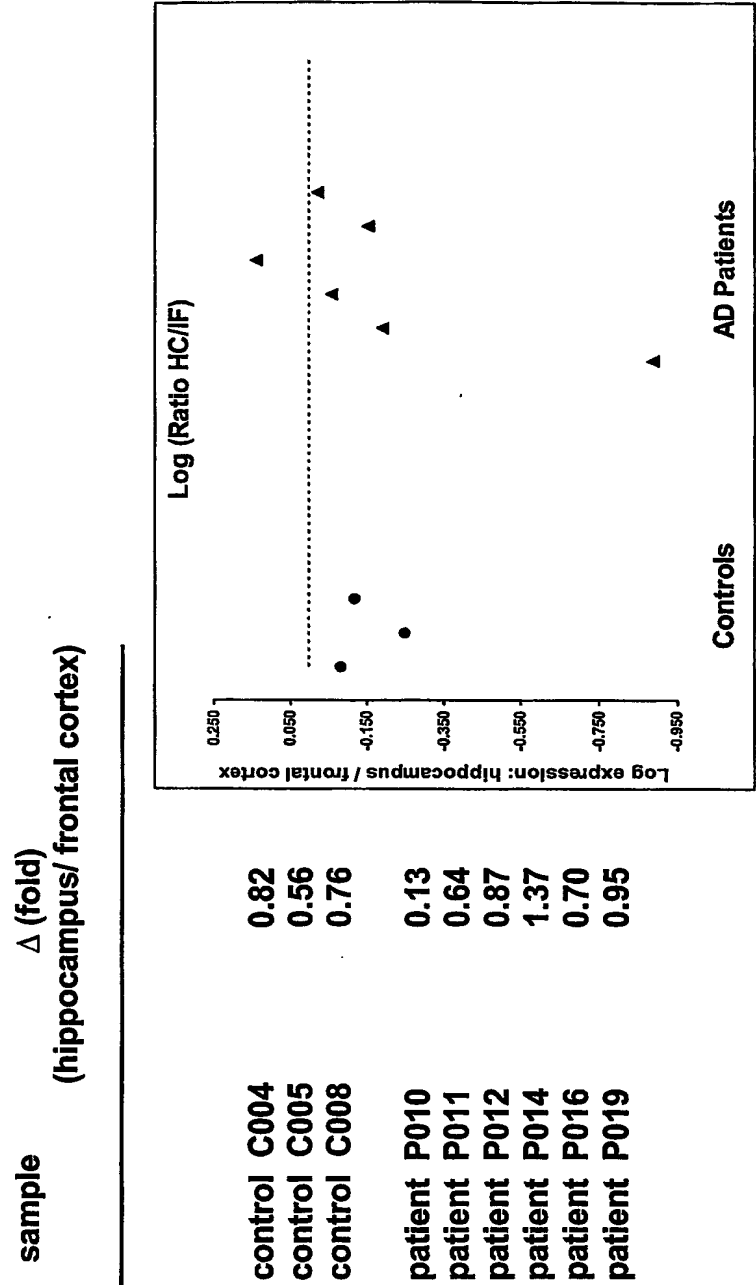
-17/26-

Fig. 16 :

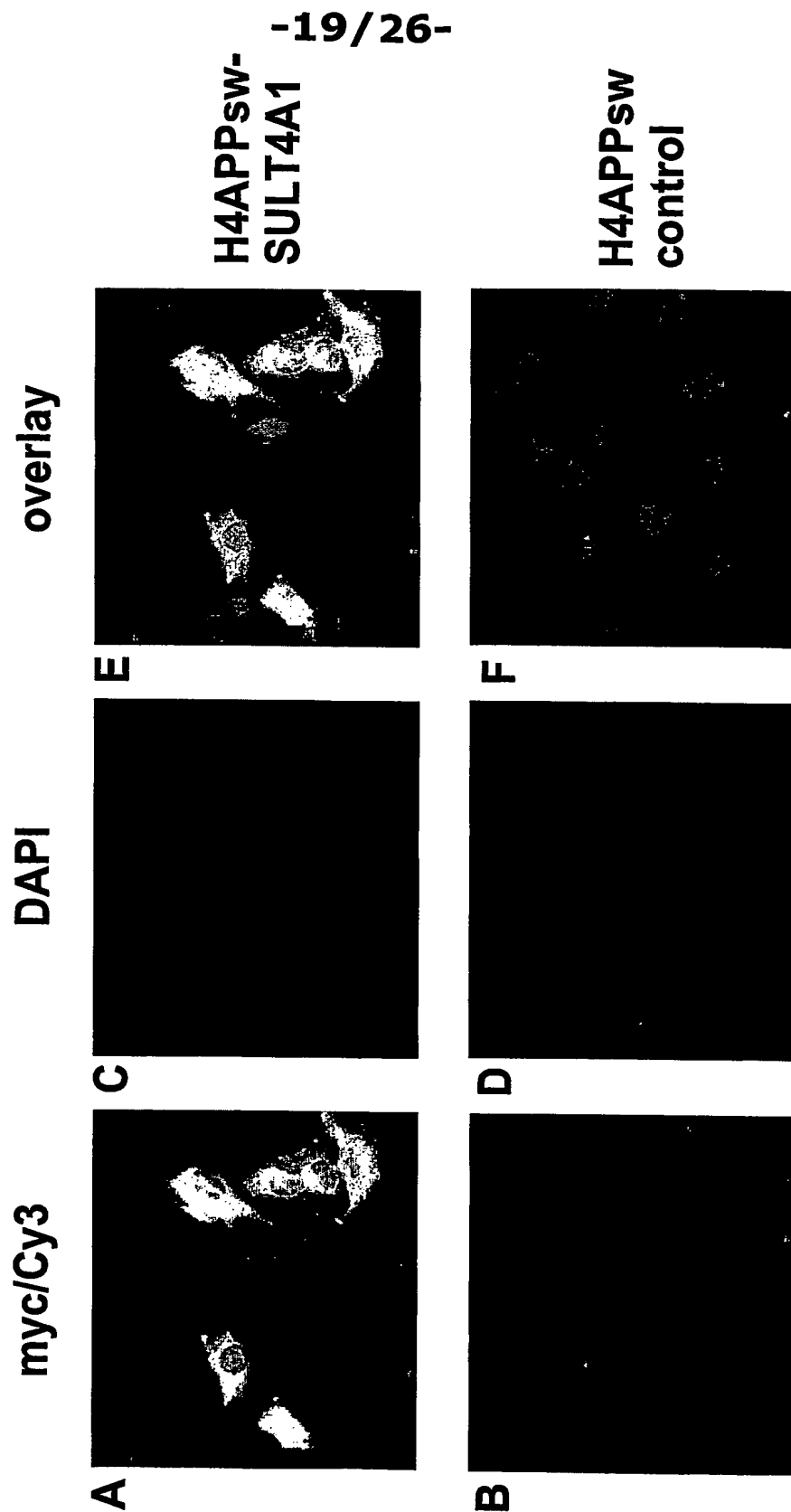


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Fig. 17 :



**Fig. 18: Immunofluorescence analysis of  
SULT4A1 protein in neuroglioma cells**



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**Fig. 19: Effect of trophic factor deprivation on  
SULT4A1 over-expressing cells**

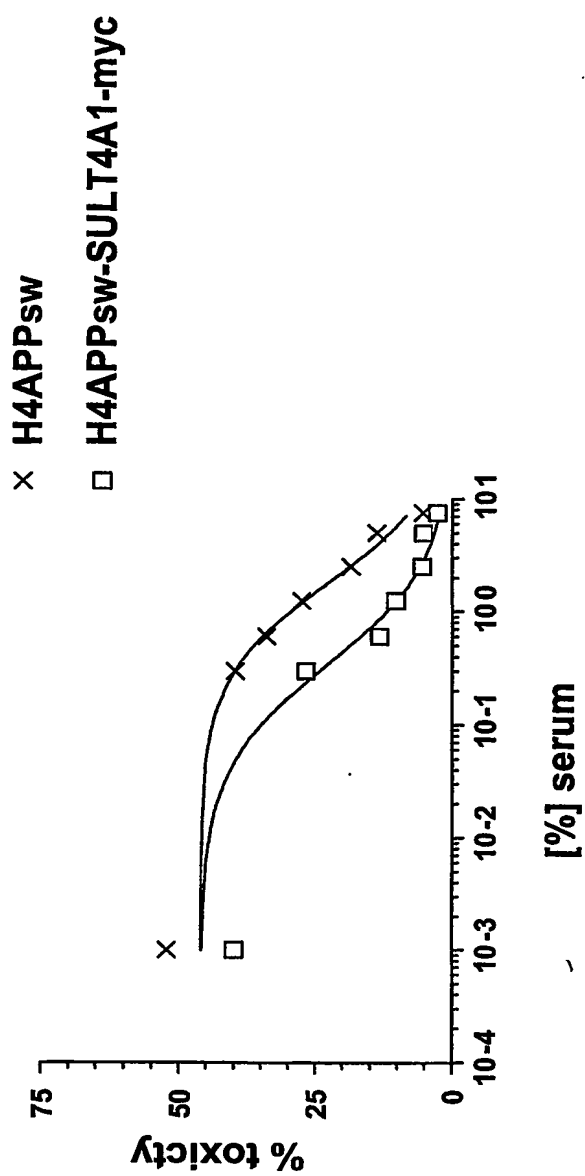


Fig. 20: Generation of Sult4A1 deficient mice

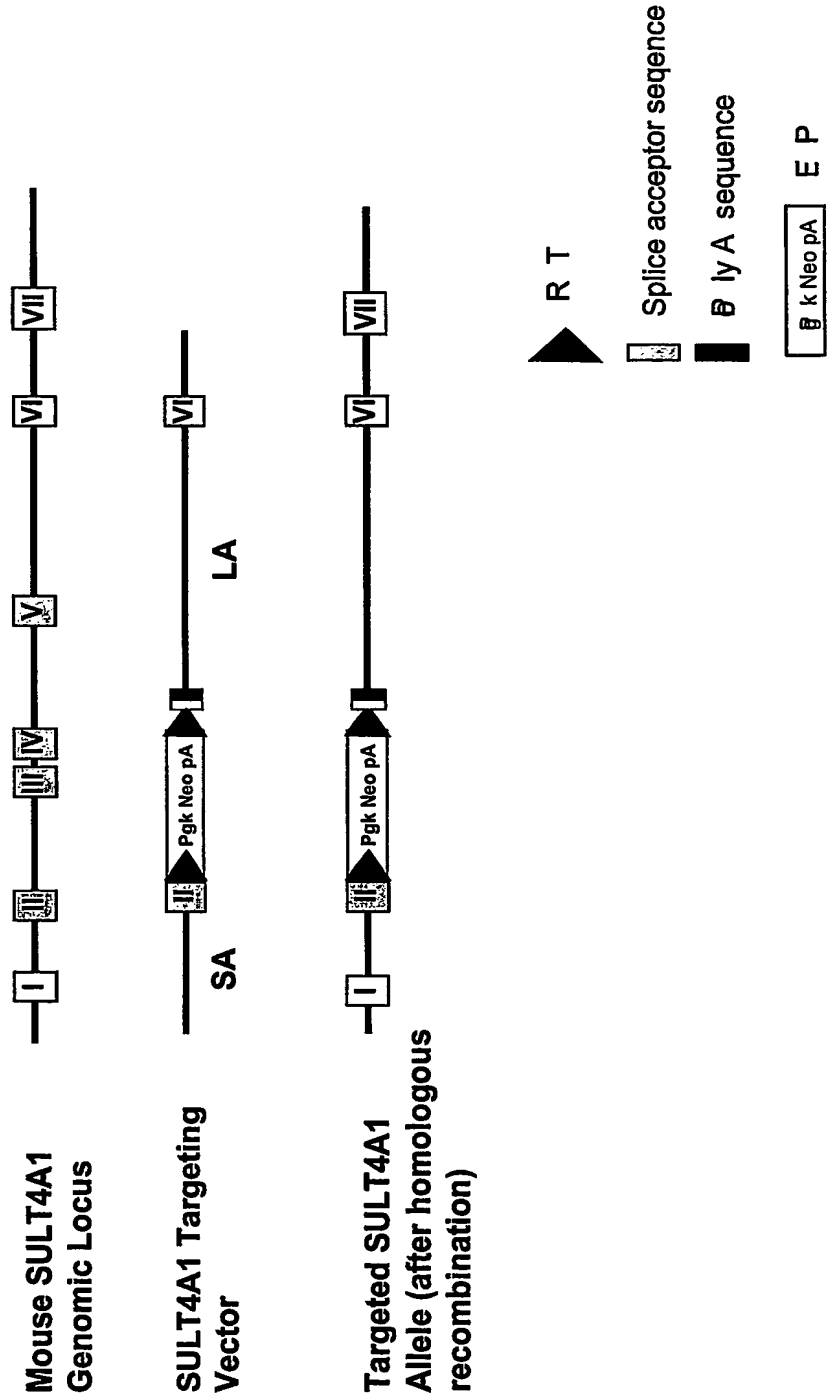
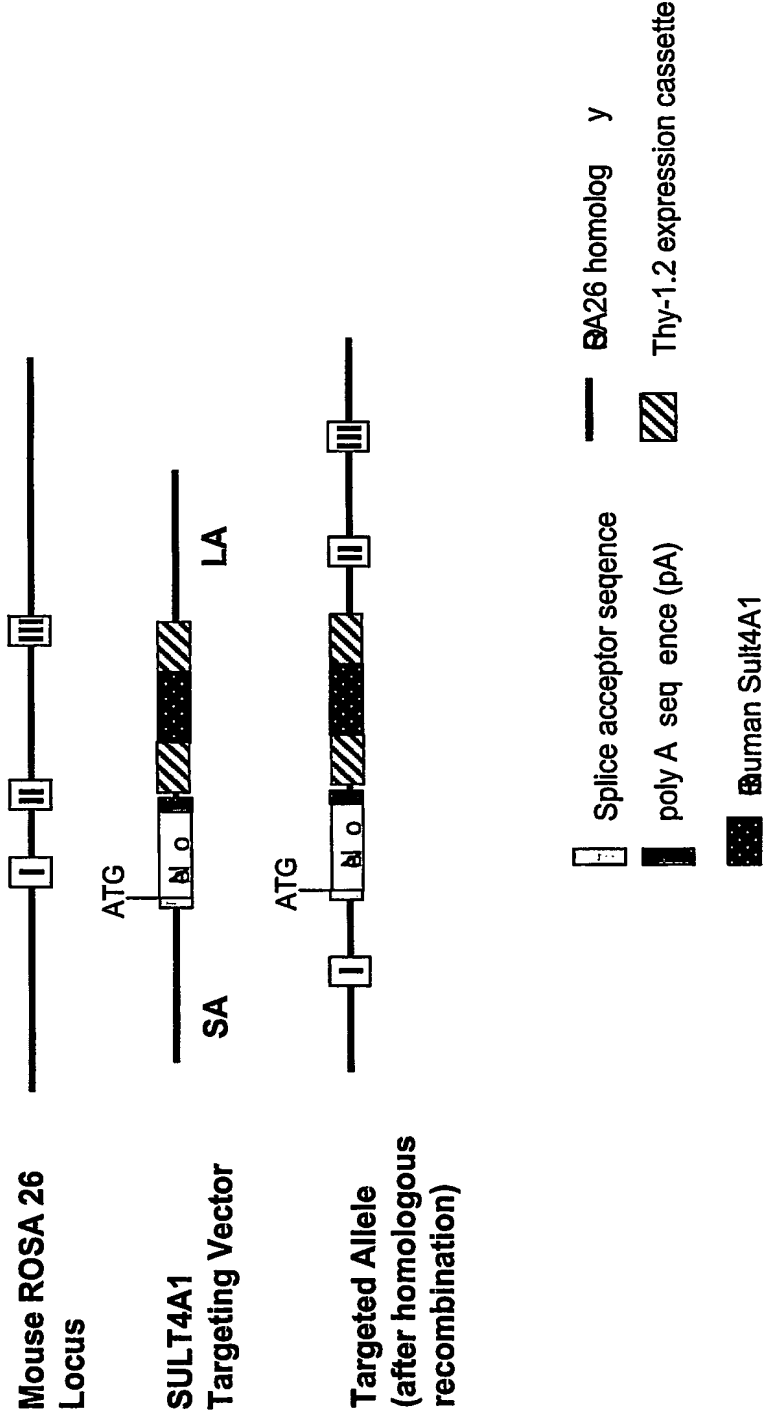
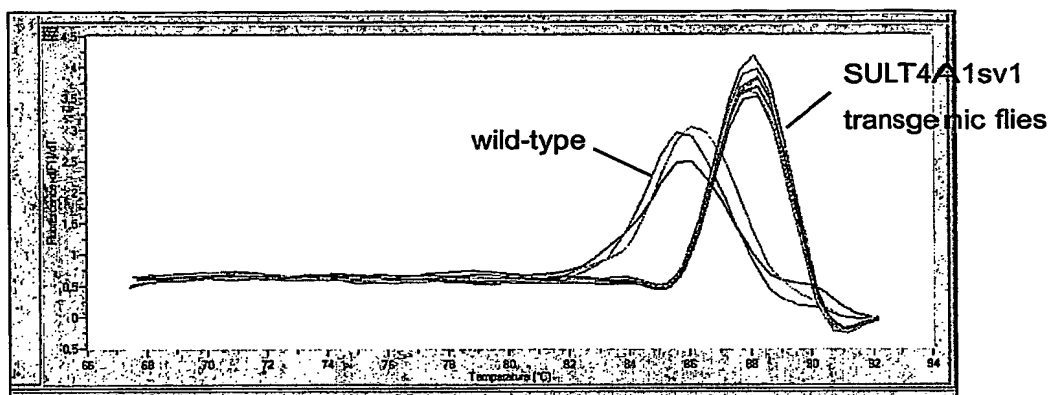


Fig. 21: Generation of Sult4A1 transgenic mice



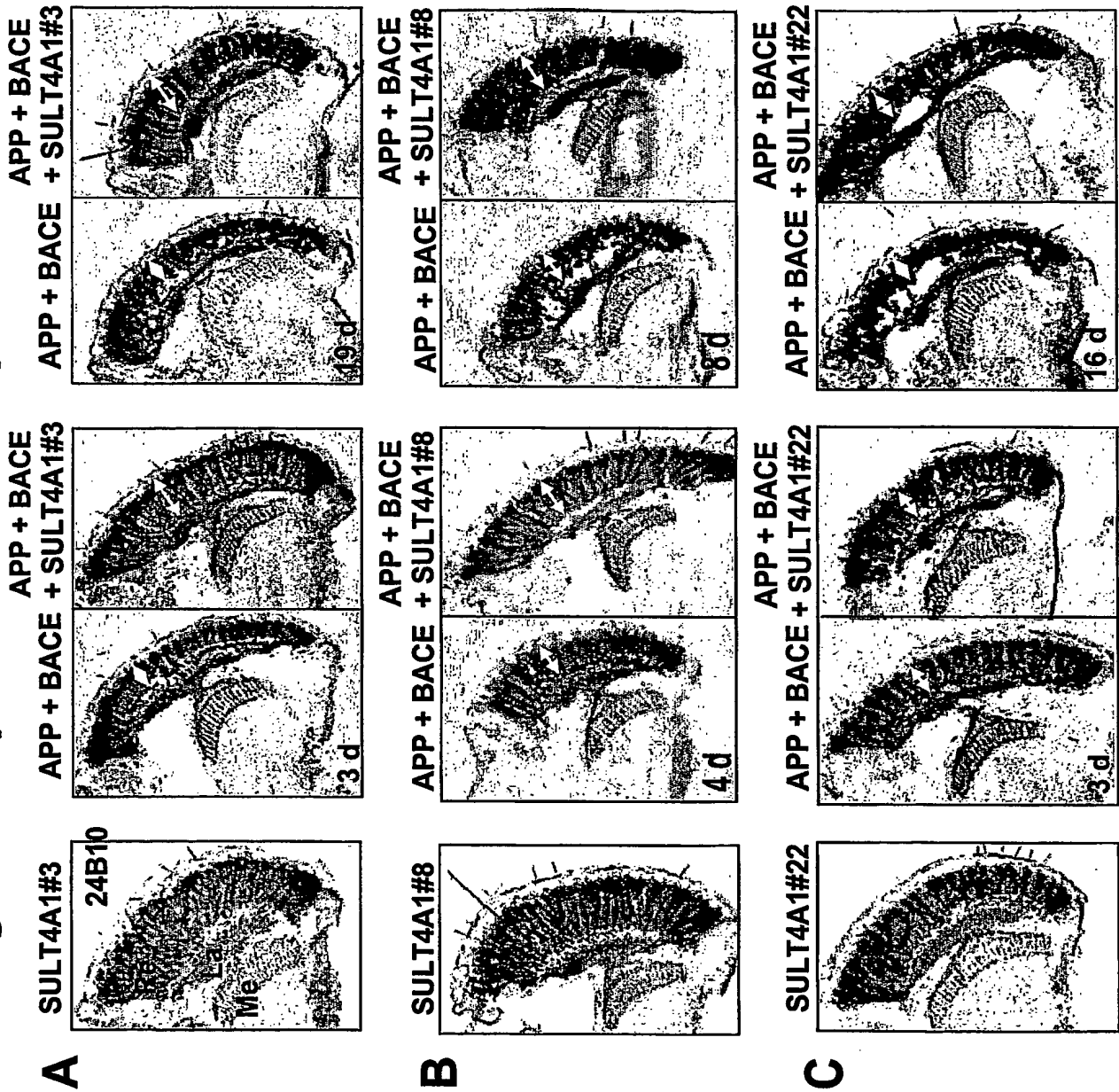
-23/26-

**Fig. 22: Transgenic expression of Sult4A1****A****B**

name	cycle number	mean	stdev	error [%]	efficiency (expression normalized to housekeeping gene)
SULT4A1#3	21.34	21.300	0.14422205	0.67709883	1.8 times more than SULT4A1#8; 2.7 times more than SULT4A1#22
SULT4A1#3	21.14				
SULT4A1#3	21.42				
SULT4A1#8	23.79	23.917	0.11676187	0.48820292	
SULT4A1#8	23.94				
SULT4A1#8	24.02				
SULT4A1#22		23.915	0.03535534	0.1478375	
SULT4A1#22	23.94				
SULT4A1#22	23.89				

$$E = 10^{(-1/\text{slope})} \quad \text{slope} = -2.960 \quad E = 2.176$$

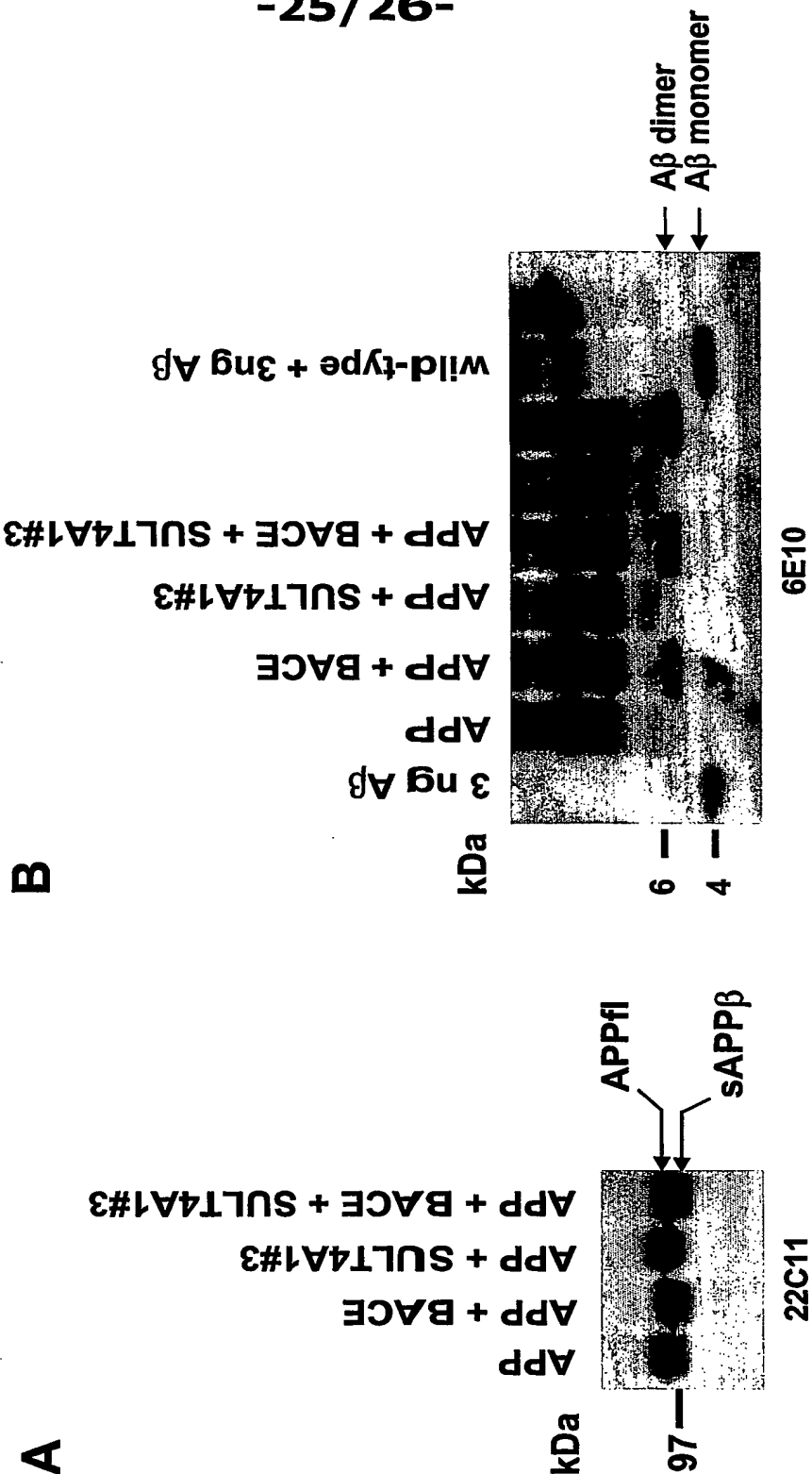
**Fig. 23: Histological analysis of Sult4A1 expression**



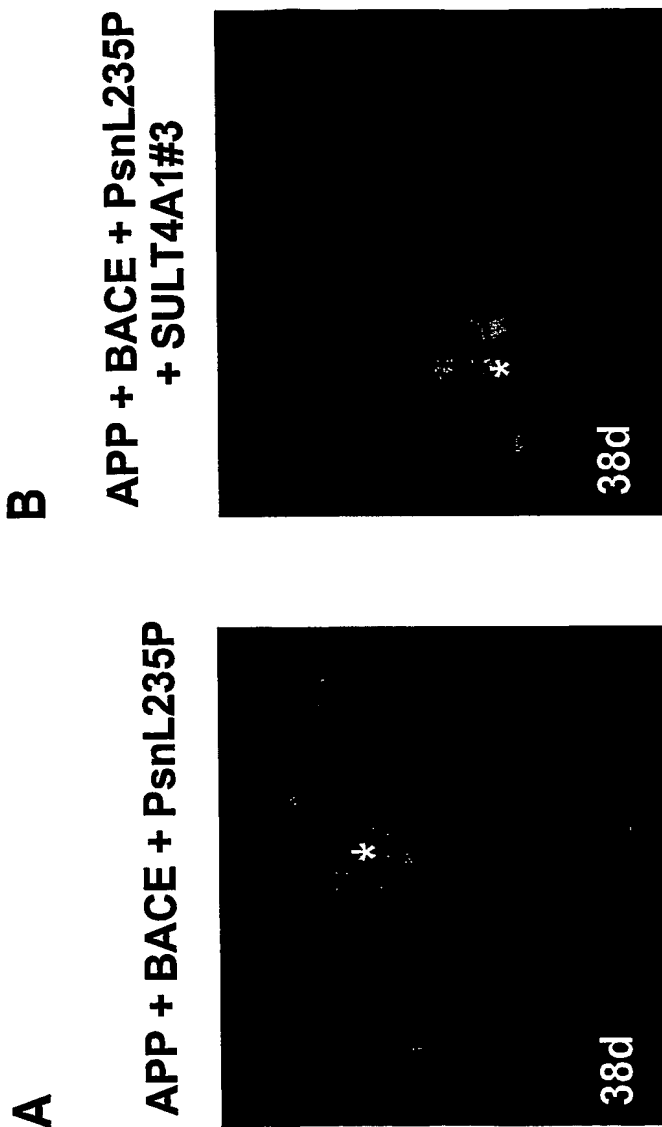


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**Fig. 24: Expression of full-length and processed hAPP in transgenic flies**



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**Fig. 25: Thioflavin S positive amyloid plaques in transgenic flies**

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